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water; if they have equal holes in the bases, respectively, how many times as long will it take the cylinder to empty as the cone ?

⁂ Solutions of these problems should be sent to B. F. Finkel not later than January 10.

DIOPHANTINE ANALYSIS.

76. Proposed by G. B. M. ZERR, A. M., Ph. D., Professor of Mathematics and Science, Chester High School, Chester, Pa.

It is required to find four positive numbers, such that if each be diminished by twice the cube of their sum the four remainders will be rational cubes.

77. Proposed by JOHN M. COLAW, A. M., Monterey, Va.

Find (1) three consecutive numbers whose sum is a cube, and (2) three consecutive numbers the sum of whose cubes is a cube.

⁂ Solutions of these problems should be sent to J. M. Colaw not later than January 10.

MISCELLANEOUS.

70. Proposed by WALTER H. DRANE, Graduate Student, Harvard University, 65 Hammond Street, Cambridge, Mass.

Prove $\tan^{-1}x=\frac{1}{2i}\left(\log\frac{x-i}{x+i}\right)$, and thence that $\pi=(2/i)\log(i)$.

71. Proposed by GUY B. COLLIER, 1901 Union, 27 Middle Section of South College, Schenectady, N. Y.

Find the locus of any point on the front sprocket of a bicycle during one revolution of the hind wheel (any gear may be assumed).

⁂ Solutions of these problems should be sent to J. M. Colaw not later than January 10.

EDITORIALS.

Dr. Halsted reports that the Sylvester Fund has just been finished with about £900.

A copy each of the July number, Vol. II., and the July number, Vol. X., of the *Analyst* is wanted. Any one who can furnish these should write to the editor of the MONTHLY.

A number of important articles will appear in the MONTHLY during the next year. Dr. Miller will continue to furnish original matter on the all-embracing subject of Groups ; Dr. E. O. Lovett will continue his series of articles on Lie's Transformation Groups ; Dr. Roe has sent in a valuable article on Symmetric Functions, and Dr. Halsted has furnished a highly valuable account of the great Russian mathematician, Tchébychev. This biography will appear accompanied by an admirable picture of Tchébychev.